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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/595,583	06/15/00	MIZE	J 30-5074(4015

EXAMINER	
GAKH,Y	
ART UNIT	PAPER NUMBER
1743	4

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DATE MAILED: 10/23/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

1- File Copy

PTO-90C (Rev. 2/95)

Office Action Summary	Application N .	Applicant(s)	
	09/595,583	MIZE ET AL.	
	Examiner	Art Unit	
	Yelena G. Gakh, Ph.D.	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-58* is/are pending in the application.

4a) Of the above claim(s) *1-13 and 35-58* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-34* is/are rejected.

7)☒ Claim(s) *15 and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it is too long. The Abstract should not exceed 150 words (15 lines). Correction is required. See MPEP § 608.01(b).

Claim Objections

2. Claim 15 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 15 recites the limitation for the generated information already cited in claim 14.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 5, 14-34 and 48 rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for differentiating between types of particles of significantly different density by light or electronic microscope, does not reasonably provide enablement for differentiating between different types of e.g. metal oxides of similar density. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims. For example, there is no way to "generate information", i.e. differentiate between oxides of nickel and iron.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 17-19 and 25-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17 recites, "the processing calculates a concentration of the undissolved material in the composition". Does it mean calculating the quantity of the undissolved material relative to the total quantity of the composition? How is the total quantity of the composition calculated? Is it known? This step is not disclosed in the specification. The same non-clarity concerns claims 18 and 19.

Claims 25-32 recite limitation for the solution, which is not a subject matter of the instant invention. It is not clear, if this limitation should be related to the reagent, since the reagent determines which metals will be dissolved, or it should be related to the composition, since its content determines what will be dissolved.

Claims 25-32 recite aluminum, copper, lead, antimony, silicon, and silver in the filtrate, which does not have any part in the steps of the method claimed. It is not clear, what is the role of these metals in the method claimed, and how they affect the steps of the method. Moreover, silver is not disclosed in the specification.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

8. **Claims 1-16, 21-28, 33-36, 38-40, 42, 43, 45-49** are rejected under 35 U.S.C. 102(e) as being anticipated by Pavate et al. (US 6,001,227, IDS).

The subject matter of these claims is covered in the following excerpt from the patent: "inclusion content of the target may be measured using a wet chemical dissolution technique. In one such method polyethylene beakers are thoroughly cleaned before use. Acids and reagent water are filtered through 0.45 micron diameter, membrane filters before use. Sample aluminum targets are rough cut by saw to sample sizes such as 1 gram each, then finished to 240 grit on polishing wheels. The samples are then precleaned by dipping in a separate bath of 30% HCl for a short time (e.g., 5 seconds) just before full dissolution, in order to remove any traces from the grinding. The samples are thereafter dissolved to their full extent in a clean aqueous solution having 30% HCl at room temperature or higher. 100 mL is used in the case of 1 gram samples, and 500 mL is used for 10-30 gram samples. Solids are collected out of the HCl solution on 0.45 micron gridded diameter filters for optical microscopy/SEM analysis, and on 0.22 micron ungridded 47 mm diameter filters for chemical analysis. Copper is dissolved off using a 10% HNO.sub.3 wash on the filters. All these operations should be carried out in a HEPA filtered laminar flow hood. The washed filters are then allowed to dry in a class 100 clean room, before microscopic examination. The inclusion size distribution may be determined using manual light microscopy techniques such as, ASTM F24 and F25. Oblique lighting should be used to prevent contamination during the analysis" (col.13, lines 14-40). Solids not dissolved in the reagent include metal oxides (Al2O3), nitride precipitates, carbide precipitates (col.2, lines 45-50). The silicon content should be less than 1% by weight (col. 11, lines 38, 39).

9. **Claims 1-8, 14-16, 22, 34, 35, 37** are rejected under 35 U.S.C. 102(b) as being anticipated by Nakanouchi et al. (US 4,584,078).

Nakanouchi teaches a method of producing fine particles, comprising dissolving a composition in methanol, filtering the solution with depositing undissolved particles on the substrate, drying them and analyzing them with an electron microscope, generating data on their size and shape.

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. **Claims 29-32, 44, and 50-58** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pavate.

Although Pavate does not disclose specifically solution containing exclusively aluminum, or copper, or both, or comprising lead or silver, or does not indicate that the predominant impurity is carbon, it would have been obvious to everyone of ordinary skill that the content of the solution depends on the content of the composition and the reagent (e. g. acid), used in "wet chemical dissolution technique", disclosed by Pavate, and can be varied on the bases of routine experimentation.

It would have been obvious that the composition can be obtained from any one of a cast

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material, a sputtering target, or solder.

It would have been a routine experimentation for anyone of ordinary skill in the art to spread the impurities of the composition on the substrate in the most convenient way, including subdividing flow pattern into a grid pattern, to optimize the conditions of scanning.

14. **Claims 17-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pavate in view of King (US 4,697,080).

Pavate does not particularly teach calculating a concentration of undissolved material, e. g. metal oxides or carbon.

King teaches analysis with electron microscope of multielement samples, comprising calculation of the concentrations of different elements in the composition.

It would have been obvious for anyone of ordinary skill to use King's technique of calculating concentrations of undissolved material, including those of different oxides or carbon, in Pavate's method of determining the content of the undissolved material by optical microscopy/SEM analysis, because the type and quantity of the undissolved material determines the quality of the composition.

15. **Claims 37 and 41** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pavate in view of Kitamura (US 5,477,049).

Pavate does not particularly disclose displaying results as a histogram.

Kitamura teaches a particle analysis method "performed with a scanning type electron microscope which directs a narrow, focused electron beam through an electromagnetic lens onto a surface of a sample mounted on a high precision stage in scanning, produces a detection signal representing intensity of secondary electrons or reflected electrons from the sample surface, and displays a representation of the sample surface based on the detection signal, the method comprising the steps of: reading the image by controlling the electron microscope by automatically shifting views produced by scanning the electron beam from a most probable spot where particles may exist to less probable spots in sequence based on information contained in the signal of coordinates of a particle location; determining the particle detection location and acquiring a detection evaluation value in the image, under the assumption that the normal distribution portion of a histogram of detection intensity is due to a simple pattern and that the rest of the distribution of the histogram is due to a particle; and scanning a location where particles are determined to exist based on the result of the determining step" (col.1, lines 55-58).

It would have been obvious for anyone of ordinary skill to represent the results of Pavate's method as a histogram, as taught by Kitamura, because it is a convenient way to represent the content of the composition, obtained by optical microscopy/SEM analysis.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. *Satou et al. (US 5,409,517)* disclose a sputtering target and a method of its manufacture, comprising a step of mixing metal powder with Si powder and scanning the resultant metal silicide target with SEM. *Dabosi et al. (US 4,980,203)* teach a "process for producing a protective film on magnesium containing substrates by chemical vapor deposition of two or more layers" (Title). "The following analyses were carried out on the substrate: analysis by a scanning electron microscope coupled to an X-ray energy scattering analyzer to identify the heavy elements present at the surface, X-ray analysis to characterize the composition present on the surface, transverse cross-sectioning with measurement of the thickness by electron microscope, analysis by "AUGER" electron spectroscopy of the concentration profile, analysis by E.S.C.A., Vickers hardness measurement, measurement of the electrochemical behavior by determination of the curves of intensity/potential in 0.5 M Na.sub.2 SO.sub.4, and qualitative "Scotch" adherence testing" (col.5, lines 58-68). . *Bogdan (US 5,665,223)* discloses a selective bifunctional multimetallic reforming catalist, for which "homogeneous dispersion of the platinum-group metal preferably is determined by Scanning Transmission Electron Microscope (STEM), comparing metals concentrations with overall catalyst metal content" (col. 6, lines 55-62).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yelena G. Gakh, Ph.D. whose telephone number is (703) 306-5906. The examiner can normally be reached on 9:30 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (703) 308-4037. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-5408 for regular communications and (703) 305-3899 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

YG
October 22, 2001

Jill Warden
Supervisory Patent Examiner
Technology Center 1700